



# Licensing opportunity

## A Camera for Real-Time Detection of Gamma Radiation Direction

### Field of use

Clinical oncology, Medical radiotherapy, High dose rate brachytherapy, Nuclear medicine environments, Nuclear power installations, Real-time control of inventory and transportation of special nuclear material.

### Current state of technology

Working prototype

### Patent status

Patent(s) applied but not yet granted

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### Developed by

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### Reference

Camera

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### Background

An angle-sensitive camera has been developed for detecting the direction of incident gamma radiation. The camera senses, in real time, the position of the radiation source, which simplifies procedures in cancer radiation therapy and in other radiation-related industries.

### Description of the Invention

**The Problem:** In the current medical practice in radiation procedures in clinical oncology (high dose rate brachytherapy), a gamma-radioactive source is temporarily inserted into the patient in order to locally deposit a therapeutic radiation dose. This means that individual sessions do not last long, and it is desirable to know the location of the radioactive source in real time. Furthermore, accidental movements may displace the source which is not detected, and leads to inaccurate dosing.

**The Solution:** A camera, sensitive to the incoming direction of gamma radiation, solves this problem since it is capable of sensing, in real time, the position of the radiation source inside the treated patient and thus introduces a quality control component to the radiotherapy procedures. The camera, while not a true imaging device, measures the dominant direction of the incident gamma rays, and hence the apparent position of the radioactive source. The camera is operated and controlled via computer software.

### Main Advantages

The camera senses, in real time, the position of the radiation source inside the treated patient in a non-invasive manner thus, unnecessary repetition of therapy is avoided

Unlike some existing complex solutions, involving complex detectors, readout, and interpretation of data, the invention involves a simple gamma ray detector and a corresponding readout system, making its use more cost-effective as well as more accurate

Technology may be set up as a stationary device (for therapeutic applications), or installed on a remote-controlled element for increased safety (for applications requiring detection of radiation in potentially hazardous material, such as radioactive waste)